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REFRIGERATION

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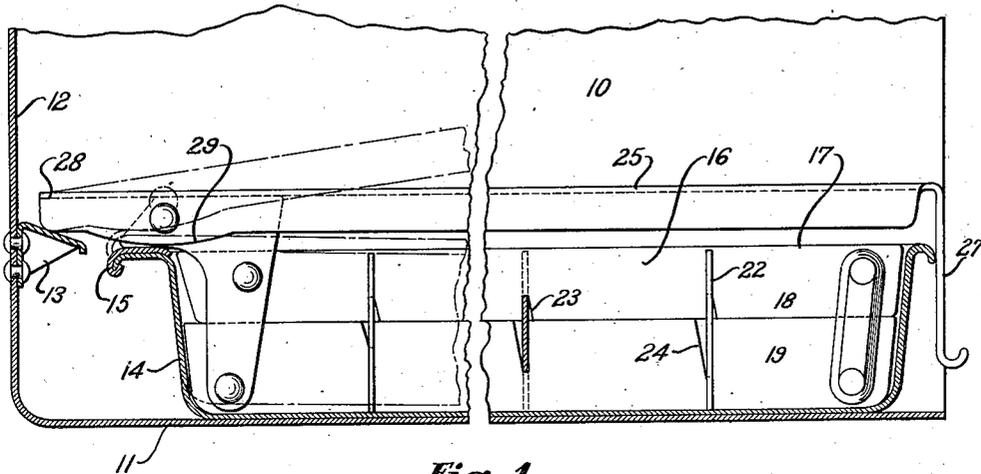


Fig. 1

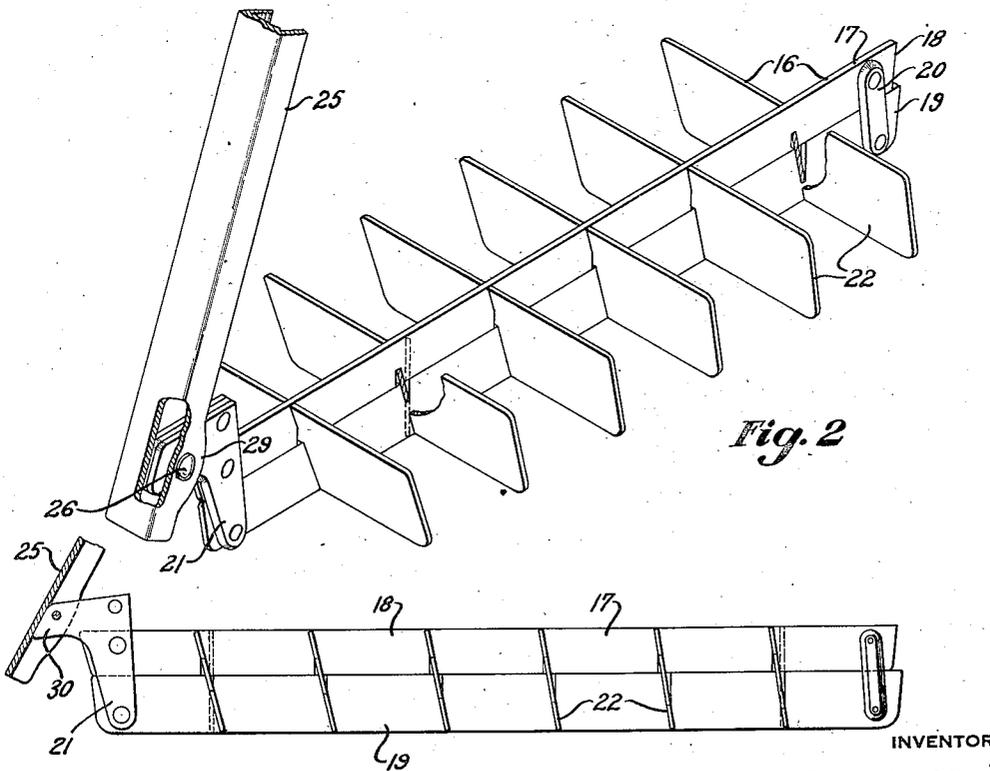


Fig. 3

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REFRIGERATION

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5 Claims. (Cl. 62-108.5)

This invention relates to refrigeration and more particularly to an ice tray adapted to be positioned in the freezing compartment of a domestic refrigerator.

When ice trays having a removable grid assembly are placed on the evaporator shelf of a refrigerator and allowed to remain until the ice is frozen the tray will be frozen to the evaporator shelf, the grid assembly, and attached cubes will be frozen into the tray and the cubes will be frozen to the grid assembly. It is therefore necessary to break the bond between the tray and the evaporator shelf, to break the bond between the tray walls and the ice and also to break the bonds between the ice and the grid assembly.

The usual procedure is to pry the tray loose from the evaporator shelf by means of some implement, pour water over the bottom of the tray until the ice is melted loose therefrom, after which it is necessary to pour additional water over the grid assembly and attached cubes until the cubes are melted loose therefrom. This procedure is a bothersome and untidy task and results in a considerable wastage of ice since the cubes are considerably reduced in size by the melting operation.

It has also been proposed to remove the grid assembly and attached cubes from the tray by means of mechanical leverage mechanism and then to remove the attached cubes from the grid assembly by hand or by some other leverage means.

These devices have not been entirely satisfactory due to the fact that it requires the application of a considerable force to remove the grid assembly and attached cubes from the tray and the cubes from the grid assembly. These prior devices are also complicated and expensive to manufacture and wear out easily necessitating their periodical replacement.

It is accordingly an object of this invention to provide an ice tray with a grid assembly removably positioned therein having means thereon for raising the tray from the evaporator shelf, for raising the grid assembly in the tray and for breaking the bond between the grid assembly and the ice cubes frozen thereto.

It is another object of this invention to provide a grid assembly adapted to be positioned in the standard ice tray having means thereon for breaking the bond between the tray and the evaporator shelf for breaking the bond between the ice and the tray walls and for breaking the bond between the ice and the grid assembly which is combined in a single mechanism.

It is another object of this invention to provide an ice tray and grid assembly which is efficient in operation, simple to manufacture, and which will not easily get out of order.

Other objects and advantages of the invention will become apparent as the description proceeds when taken in connection with the accompanying drawing in which:

Figure 1 shows the device of the invention positioned on the evaporator shelf of a domestic refrigerator;

Figure 2 is a perspective view of the grid assembly according to the invention in which the grid assembly is shown removed from the tray, and;

Figure 3 shows the grid assembly in a position for breaking the bond between the grid assembly and ice frozen thereto.

Referring to the drawing, the numeral 10 represents the freezing compartment of a domestic refrigerator having a bottom 11 and a back wall 12. A bracket 13 is secured to the back wall 12 of the freezing compartment.

The tray 14 is of standard construction except that a reinforcing plate 15 is suitably secured to the upper edge thereof at its rear end.

The grid assembly is generally indicated at 16 and comprises a longitudinal grid member 17 and lateral grid members 22 to form a plurality of ice compartments when positioned in the tray 14.

The longitudinal grid member 17 is made up of upper and lower sections 18 and 19 secured together by links 20 and 21. The upper and lower sections 18 and 19 are slotted as shown at 23 and 24 to receive the lateral grid members 22 which are slotted at their top and bottom edges to receive the upper and lower sections 18 and 19 of the longitudinal grid member.

The link 21 is extended upwardly above the upper section 18 of the longitudinal grid member and a lever 25 of channel shape in cross-section is pivoted thereto as shown at 26. The lever 25 has a handle portion 27 extending downwardly in front of the tray and an extended portion 28 which extends beyond the rear end of the tray 14 when the grid assembly is positioned therein. The extension 28 has cam portions 29 which cooperate with the reinforcing plate 15 for raising the grid assembly in the tray. The link 21 has a portion 30 which cooperates with the bottom of the channel member 25 for moving the upper and lower sections 18 and 19 longitudinally relative to each other. As shown the slots 23 and 24 are enlarged on

opposite sides of the lateral grid members 22 so that when the upper and lower sections 18 and 19 are moved longitudinally relative to each other the lateral grid members will be canted from a straight vertical position.

The portion 28 of the handle 25 could be bent downwardly and extended to adjacent the bottom 11 of the evaporator so that when the lever is raised the extended portion would contact with the bottom 11 and thus raise the tray 14 from the evaporator shelf. In this case the bracket 13 would be omitted and it would not be necessary to modify the evaporator housing.

In operation the grid assembly 16 is positioned in the tray 14, the tray filled with water and placed in the freezing compartment 10 and the water allowed to freeze. When the water is frozen the handle portion 27 of the lever 25 is grasped and the lever 25 raised through a short arc as shown in dotted lines of Figure 1. This will cause the portion 28 of the lever 25 to contact with the bracket 13 on the back wall 12 of the freezing compartment and thus break the bond between the bottom of the tray 14 and the evaporator shelf 11.

The tray 14 with the grid assembly therein is then removed from the evaporator and the lever 25 moved through a still greater arc till the cam portions 29 contact with the plate 15 which will break the bond between the ice and the tray wall. The grid assembly and attached ice cubes is then removed from the tray and the lever 25 moved through a still greater arc until the portion 30 of the link 21 contacts with the bottom of the channel lever 25 as shown in Figure 3 which will move the upper section 18 longitudinally relative to the lower section 19 of the longitudinal grid member. This movement will cant the lateral grid members 22 from a true vertical position and thus break the bond between the cubes and grid assembly.

Since the lever 25 extends the entire length of the tray and is positioned closely adjacent thereto there will be ample leverage for first breaking the bond between the evaporator shelf and the tray, secondly breaking the bond between the ice and the tray wall and then breaking the bond between the individual cubes and the grid assembly and which at the same time will not take up excessive space in the freezing compartment.

When the sections 18 and 19 are moved longitudinally of each other and the lateral grid members 22 are canted from a true vertical position the ice is sheared from the longitudinal grid member 18 and at the same time the bond between the ice and the lateral grid members is broken.

As can be seen from the foregoing the device of this invention provides a grid assembly adapted to be positioned in a standard ice tray, combined in a single mechanism with means for first breaking the bond between the tray and the evaporator shelf, then between the tray walls and the ice and then between the grid assembly and the ice, in which there are no parts which can be lost or misplaced which is efficient in operation, simple and economical to manufacture and which cannot get out of order.

While I have shown but one embodiment of my invention it is to be understood that this embodiment is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown but to

include all equivalent variations thereof except as limited by the scope of the claims.

I claim:

1. In combination with an evaporator of a refrigerator having a support for an ice tray, an ice tray positioned on said support, a grid assembly removably positioned in said tray and means carried by said grid assembly to cooperate with said evaporator for raising the tray from the support, said means being so constructed as to raise said grid assembly and attached cubes from the tray and separate the attached cubes from the grid assembly.

2. In combination with an evaporator of a refrigerator having a support for an ice tray, an ice tray positioned on said support, a grid assembly removably positioned in said tray and lever means carried by said grid assembly so constructed and arranged as to cooperate with said evaporator and tray to sequentially raise said tray from said support and said grid assembly and attached cubes from said tray, said means being operative to separate ice cubes from said grid assembly.

3. In combination with an evaporator of a refrigerator having an ice tray supporting shelf, an ice tray positioned on said shelf, a grid assembly removably positioned in said tray and means on said evaporator cooperating with said tray from said shelf, said last named means being so constructed and arranged as to raise said grid assembly and attached cubes from said tray and break the attached cubes from the grid assembly.

4. In combination with an evaporator of a refrigerator having a supporting shelf, a tray supported by said shelf, a grid assembly removably positioned in said tray, said grid assembly comprising longitudinal and lateral grid members, said longitudinal grid member comprising upper and lower sections so constructed as to be movable longitudinally of each other, said lateral grid members being so secured to said longitudinal grid member as to be canted when said sections are moved relative to each other, a lever pivoted on said longitudinal grid member having means thereon to contact means on said evaporator for raising said tray from the shelf when the lever is moved through a short arc, means on said lever adapted to cooperate with the edge of the tray for raising the grid assembly in the tray when the lever is moved through a greater arc and means on said lever so constructed as to move the sections of the longitudinal grid member relative to each other when the lever is moved through a still greater arc, whereby the lateral grid members are canted to break the bond between the grid assembly and ice cubes frozen thereto.

5. In combination with an evaporator having a support for an ice tray, an ice tray on said support, a grid assembly removably positioned in said tray, said grid assembly comprising longitudinal and lateral grid members, said lateral grid members being movable relative to said longitudinal grid member, and means mounted on said grid assembly including means to cooperate with said evaporator to raise said tray from said support, to cooperate with said tray to raise said grid assembly and attached cubes in said tray and to move said lateral grid members relative to said longitudinal grid member to release ice from said grid assembly.

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